

Mount Diablo Astronomical Society

Diablo Moon Watch

April 2012

GENERAL MEETING

Tuesday April 24, 2012

"The New Moon."

By Mr. Brian H. Day

*Doors open at 6:45 p.m.
Concord Police Association Facility
5060 Avila Road, Concord*



Most of us grew up learning that the Moon is a completely arid, geologically dead, and airless world.

However, a new generation of robotic lunar explorers is fundamentally changing our understanding of the Moon. We now know the Moon to possess a complex, dynamic environment. Brian Day, from the NASA Lunar Science Institute and NASA's Lunar Atmosphere and Dust Environment Explorer (LADEE) mission, will show how the Moon is a far more interesting place than we had previously thought. He will also discuss how amateur astronomers, students, and interested members of the public can work with NASA to explore the Moon and directly participate in

the science of the LADEE mission.

Mr. Brian Day is the Citizen Science Lead and Education/Public Outreach (E/PO) Specialist at the NASA Lunar Science Institute. In this role, he coordinates programs with numerous internal and external partnering organizations, focusing on providing opportunities for students and the public to directly participate in lunar science and exploration.

Brian also currently serves as the Education/Public Outreach Lead for NASA's Lunar Atmosphere and Dust Environment Explorer (LADEE) mission to the Moon, scheduled for launch in 2013. From 2007-2010 he served as the E/PO Lead for NASA's LCROSS lunar impactor mission which discovered deposits of water ice at the Moon's South Pole. He has also participated in producing the Education/Public Outreach sections for numerous NASA mission proposals. Brian has

played key roles in various NASA Mars Analog Field Studies, providing technical support in the field for webcasts and robotic rover tests in extreme environments here on Earth. In 2007, he flew on the Aurigid-MAC mission to record fragments of comet Kiess entering Earth's upper atmosphere.

Brian has worked as an instructor in San Jose State University's Internet Business Specialist program, and has taught astronomy through the Metropolitan Education District in San Jose and as part of Project Astro. He is very active in the amateur astronomy community and served as the chairman of the Foothill College Observatory for 16 years. Brian earned a Bachelor's degree in Psychology from the University of California Los Angeles, a Bachelor's degree in Information Systems from the University of San Francisco, and a Master's degree in Astronomy from the University of Western Sydney.

WHAT'S UP

Transit of Venus - June 5, 2012. Once the stimulus for worldwide scientific expeditions, the approaching transit of Venus across the Sun will be the last such until 2117. This presentation will describe their historical role and when and where to watch or photograph the upcoming event, together with safe ways to do so. *John Westfall*

PRESIDENT'S CORNER

Making CONTACT with the Ultimate Telescope

by Chris Ford

CONTACT is an annual conference established back in 1983 as an interdisciplinary forum for scientists, anthropologists, writers, and artists, to explore the possibilities of what may lie in our future.

Held this year at the SETI institute in Mountain View between April 29th

and March 1st, the core premise of CONTACT is the notion that at some future point, our civilization will establish communication with other forms of life whether primitive or advanced, and that this occasion will have a profound impact on both our scientific understanding of the Universe and just as profoundly our culture and beliefs. For this reason CONTACT defies easy categorization and is highly interdisciplinary in its content, with presentations covering a wide gamut of subjects. To provide some flavor, this year's talks included insights into cave slime and the persistence of life in geological formations, concepts for Moon habitats, how technology impacts art using Victorian political cartoons as examples, learning cetacean (Dolphin) languages, a Kepler mission report, the likelihood of alien civilizations being predatory, the feasibility of our broadcast TV signals being picked up by alien life,

(unlikely) the use of the cloud to produce a short film on a Arthur C Clarke story, and much else. This year's contribution was a talk entitled "Watch this space: How new technology and media will democratize amateur astronomy".



Representing the amateur astronomers perspective for the MDAS.

Besides professional scientists, CONTACT attendees include anthropologists, sociologists, film media personalities, amateur astronomers, graduate students, and science fiction writers, and it is this eclectic blend of hard and social sciences with the media and arts, that gives the event its highly distinctive flavor. Well known attendees lined up for this year included Scientific American columnist and editor of Skeptic magazine Michael Shermer, and writer Larry Niven who unfortunately had to cancel at the last minute. Other CONTACT science fiction writers of note include David Brin, Greg Bear, Kim Stanley Robinson, and Karen Anderson. (Wife of the late Poul Anderson)

Above all, CONTACT is intended to be a forum for new ideas in which specialists in specific disciplines can step outside of the box and rejuvenate their perspectives through exposure to seemingly non-related fields, and explore new possibilities.

This is one of those events where your brain gets a thorough workout. For example, one talk this year was entitled "The EvoGrid and ChemoGrid: Genesis Engines Driving to a New Origin of Life"



Michael Shermer discussing whether aliens would really be predatory

that summarized research into the ability of computational chemistry to model the potential genesis of life and its evolution in a computer algorithm, followed by a printer that actually produces it in the flesh! No, this has not happened yet and may take centuries of computing to do so, but if Moore's law remains true, the possibility is absolutely there.

Given the above focus, CONTACT is also an excellent venue to

Making CONTACT with the Ultimate Telescope (Continued from the previous page)

rub shoulders with the SETI community, including well known names such as Seth Shostak, Jill Tarter, and this year Frank Drake the pioneer of SETI (Search for Extra Terrestrial Intelligence) and creator of the well known "Drake Equation" used to estimate the number of detectable extraterrestrial civilizations in our galaxy.

dence provides a counter check against which the Drake equation can be further refined. Drake who is now 81 went on to describe a concept that will resonate with any member of the MDAS interested in really, really, big telescopes. Simply a telescope with a lens as big as the Sun.

Relativity back in 1919 during Arthur Eddington's famous observation of a solar eclipse. If an alien civilization were broadcasting electromagnetic signals revealing their presence, and on their way to Earth, these signals encountered a foreground star or other high mass object, that signal would be bent by the stars gravitational field and very greatly magnified.

As mentioned earlier, CONTACT is an occasion to give your mind a workout, all of which led Drake to describe what must be the ultimate telescope. Gravitational lensing is a now well documented effect wherein

This basic principle leads to the concept of a SETI gravitational lens telescope that could use the Sun's gravity as a gigantic lens to bend space and thus the path of light from distant objects. So sensitive would such a gravitational telescope be, that it could pick up weak transmissions from solar systems right across the other side of

the galaxy at radio wavelengths. To give some sense of the amount of magnification involved, distant electromagnetic radiations would be boosted by at least 10 to the eighth power. At optical wavelengths, such a gravitational tele-

scope would be capable of seeing not only continents but even cities and possibly roads on inhabited planets circling nearer stars. The Sun is actually the smallest lens possible for this type of telescope, the other obvious nearby large body - Jupiter, being too weak gravitationally.



The famous Drake equation

Drake in his Keynote speech, explained how the explosion of discoveries in extrasolar planets plus our increasing understanding of potential astrobiology is starting to fill in some of the formerly unknown terms in his famous equation.

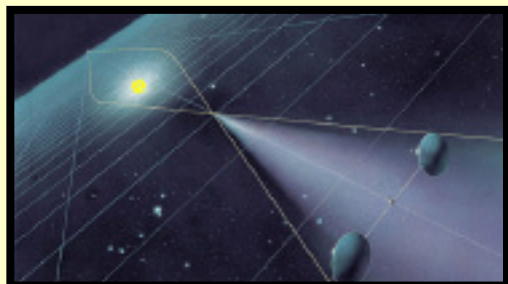
The fact that there are now from our current understanding probably BILLIONS of earth sized worlds in our galaxy is truly astonishing and extremely encouraging when we consider the possibilities that some may be the abode of advanced civilizations. At the same time the Fermi Paradox which highlights the apparent contradiction of these high estimates with the actual lack of evi-



Frank Drake describes the Allen Array leading to a concept far more impressive...

massive objects such as galaxies and stars can bend the light of more distant background objects and a number of examples have been discovered. The fact that light can be bent by gravity was the first proof of General

Making CONTACT with the Ultimate Telescope (Continued from the previous page)



A gravitational lens telescope

It's not quite that easy of course. A "slight downside" is that the prime focus for such a gravitational telescope relative to our Sun's mass starts at about 550 astronomical units away from the Sun. Given that the distance to Pluto is currently 32 astronomical units, and the furthest distance any man made object has travelled is Voyager 1 at 120 Astronomical Units, that is a very long way out indeed. Just getting there would take decades let alone the challenges of "pointing" the telescope at different stars requiring huge lateral movements. However there is nothing in astro-

physics that says such a gigantic telescope is not possible, and it may be the only way we currently know to lis-

ten in to civilizations located at vast distances from us. Indeed, Drake suggests that intelligent civilizations could be communicating by gravitational telescopes for billions of years in a type of galactic internet, and we just need to log in.

The gravitational telescope is just one example of the types of ideas that circulate at CONTACT. This is a smaller and friendly conference open to anyone, and provides the opportunity to mix socially with some of the most accomplished individuals in their



A presentation from SETI institute director Jill Tarter.

fields. If anyone is interested in the next CONTACT in 2014 and the types of subjects described above, details can be found at: <http://contact-conference.org/>

May our skies be full of aliens!

Chris Ford

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- Renew online using Paypal or your credit card at: http://mdas.net/mdas_store.html, select Membership Renewal.

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Mount Diablo Astronomical Society

P.O. Box 4889

Walnut Creek, CA 94596

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tions renewals are handled online - AT THE CLUB DISCOUNT RATE!

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Any questions, please email memberinfo@mdas.net or call Marni Berendsen at 925-930-7431.

My First Telescope

by Nathaniel Bates

I want to begin by thanking the Mount Diablo Astronomical Society for giving me the opportunity that the Club has given me over the years to contribute to this Forum.

I have been privileged to work with such intelligent and erudite Club members who have been regular contributors, along with President Ford and our tireless Editor Vianney. In particular, they have been forgiving of my writer's ego, that unique type of ego being a common albatross-around-the-neck of Editors for the longest time. I also want to thank the readers who have come up to me, thanked me, and told me how much they have enjoyed what they have read. It has made all of the difference to me. Finally, I want to thank those who have made constructive suggestions, without which my articles would not have seen improvement. You have all made a difference in my life. Let me finish this introduction by stating that I will not be contributing to the May Newsletter so that I can focus on my "What's Up" presentation. I intend to make my "What's Up" as exciting as I

can possibly make it!

In this article, I want to go back through Memory Lane and talk about my first telescope. In a way my title is a lie, or at least not the full story. This is more than simply an account of my first telescope. It is really a story about how I got interested in Astronomy. I want to craft a narrative of how I grew from a Kindergartner to a First Grader, and how I became interested in learning and knowledge. In



My first telescope

Kindergarten, I knew how to tell time, some basic reading, and how to line up. I would not call myself an academic giant. More importantly, teachers and fellow students would not have called me an academic giant. There was no indication that I would be very interested in Astronomy, Biology, or any science whatsoever. There were even some doubts as to my intelligence and academic ability.

I entered First Grade at the middle to low end of the academic scale. I stayed after school on

one or two occasions so that my teacher could test my reading skills. I am grateful to her for caring and diligence. Often in this day and age of standardized testing and a fast instruction pace it is hard for teachers to bring all students up to the common level. I could read alright, but my sense of confidence was not exactly what one would hope. I felt out of place at school, and did not necessarily want to attend. Often times the education system felt big and I felt small. This was more the way it was than anything I would complain against.

I remember my very first concept of how planet Earth existed.

For some strange reason, in the beginning part of First Grade I believed in something akin to the Hollow Earth theory. Don't ask me how I got this idea. I doubt that I picked it up from any paranormal literature, since I was not reading such literature in those days. There was one difference between my "Hollow Earth" conception and that promoted by certain New Age circles. In my conception of the Hollow Earth, humans actually lived inside of the Earth. We lived on the inside of a shell. The sun was in the center of the sphere, while if we dug deep enough we would reach deep space. I am not sure of what cultures might believe such things. I doubt too many cultures, past or present, believed such an account. Incidentally, as an aside, I also dreamed of being a King when I grew up. I was quickly disabused of such a notion when I

My First Telescope *(Continued from the previous page)*

was told by my mother that one had to be born to being a King.

One day, after First Grade was moving along in its inexorable march from September to June, my majesty having been long dethroned, I was walking through the living room and my mother was drawing something on a piece of paper. It was the Solar System, she told me, and we were going to have a lesson. She drew out the Planets from Mercury to Pluto, and I was entranced. (There was no question about Pluto being a Planet in those days!)

I memorized all of the names, and naturally I was soon convinced that we lived on the surface of the Earth and not inside Earth. I learned about gravity, its attractive power, and even after the weeks and months stumbled on Einstein's view of space-time as being curved. I began to learn about Astronomy, and wanted to know more, and more, yet more still. I began to devour knowledge. It was as if a light switch had turned on. One might compare it to the transition from the Dark Ages to the Renaissance, or perhaps from the wars of the Seventeenth Century to the period of the Enlightenment.

Soon enough, I got my first telescope. It was a Tasco, a Refractor. Most of you remember that one. The telescope wobbled on its tripod, and probably was not much good for any kind of deep sky observing. I could view Venus and the Moon, perhaps a few other objects. It was not the point. The point was that I was an Astronomer now, a real amateur. I



My second telescope

finally saw the Moon, as if I were a NASA astronaut. I imagined myself a NASA astronaut, a real space scientist. I projected myself through the light-years, and saw myself exploring distant Galaxies. It was not simply the light of the stars that shone. It was the light of knowledge and imagination that shone in me. Where my knowledge ended my imagination could still range. Cognizant of the fact that light speed was the cosmic limit, for some reason I knew that my imagination was the one thing that could take me further and I allowed it to carry me far beyond our Solar System or even our Galaxy.

I eventually signed up for an Astronomy class given by the Parks and Recs Department of the City of Oakland. Yes, in those days, there actually was funding for such a thing. They taught us about such things as Black Holes and Relativity. I once sat transfixed during a movie in which space

graphics were shown. Even by today's standards it was "cool." (Coolness was important in those days!) I knew that the Universe held so much opportunity, and desperately wanted to go there. I knew that Earth was a small speck in a vast cosmic ocean, just as my hero Carl Sagan said it was. With my small telescope, I could not see much. What it did for me was to allow me at least a peek at the cosmic ocean. It was enough for me that I

could participate in navigating this vast ocean.

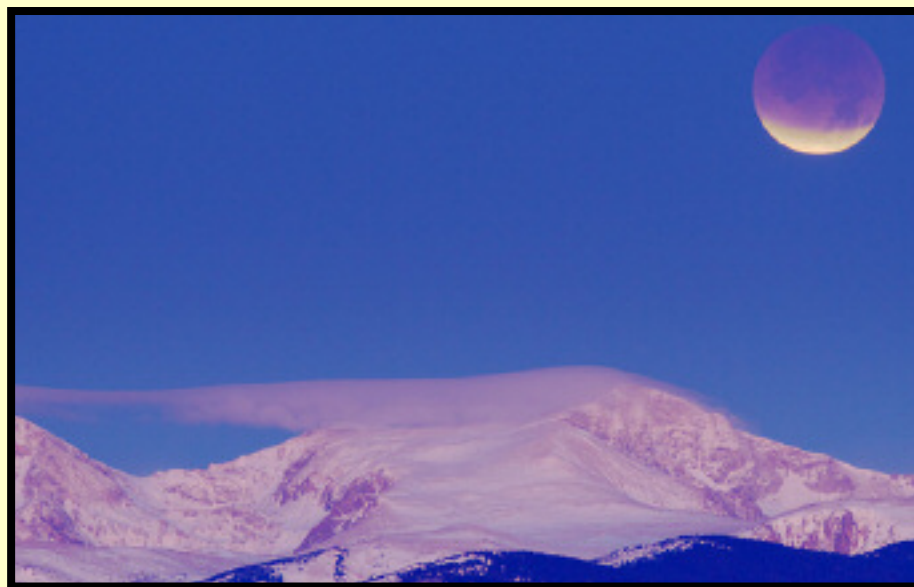
Each year held a slightly different interest for me in science. In First Grade, it was Astronomy. In the Second Grade, it was Biology. In the Fourth Grade, I got interested in Physics. By Fifth Grade, my teacher instilled in her class an interest in Anatomy and Zoology. She was an excellent teacher of the sciences. (She still teaches in Oakland now) I am fortunate to have had parents who were willing to invest in me and to buy the telescope for me. I am also fortunate to have had teachers willing to invest in my interest in science. I think of those students who were not as fortunate as I have been. Some of them never got the first telescope that might have excited their interest in Astronomy. Such a thought grieves me deeply.

By Fifteen, I got my second telescope. It was an eight-inch Schmidt Cassegrain. My first view

My First Telescope *(Continued from the previous page)*

was of Saturn, crisp and clear. I soon moved on to deep sky objects. In a sense, I picked up where I left off. But, I also have to admit that in many respects my first telescope at age six was a golden age of optimism and hope. Environmental problems and war seemed distant. Pessimism about the world's problems was unknown to me.

My overriding feeling was one of optimism and hope that I too could travel to space, make discoveries, and be a hero like Captain Kirk and Captain Cosmic. Sometimes I close my eyes and remember such optimism. My hope is that other kids can have similar optimism, and for society to be willing to invest in their interests and dreams. In this day and age of budget cuts and a willingness to write off so many of



America's kids, I still hold on to that hope. In science, a hope that does not fit the evidence is abandoned. However, even at age six I knew that there had to be some dreams that one never abandons.

I still have my second telescope. I gave away my first so that another kid could enjoy it. I did not charge anything for the Scope. By giving away the memory long after I could be inspired by it any further, I got more than I could hope for.

Your Help Would Be Greatly Appreciated

Our association needs a few members to come at 6:30 p.m. before our monthly meeting which starts at 7:15 p.m. to help in setting up the chairs and other elements needed to conduct the general meeting.

Similarly at the end of each meeting the chairs and tables have to be removed, the room has to be cleaned and the garbage emptied.

Thank you for your help.



Mount Diablo Astronomical Society Event Calendar—April 2012

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|--------------------------------------|---|---|-------------------------------|---|---|
| 10:00 AM Sports Basement Earth Day 1 | 2 | 3 | 4 | 5 | 6  | 7 Sunset: 7:38 PM |
| 8 | 7:30 PM Board Meeting 9 | 7:00 PM MDAS Imaging SIG 10 | 7:30 PM Parkmead Stargazing 11 | 12 | 13  | 7:00 PM Public Astronomy 14 Sunset: 7:44 PM |
| 15 | 16 | 17 | 18 | 8:00 PM DVMS Stargazing 19 | 20 | 7:30 PM Society Observing 21 Sunset: 7:51 PM  |
| 22 | 7:45 PM Buena Vista Stargazing 23 | 7:15 PM GenMig: New Moon Missions 24 | 7:45 PM Joaquin Moraga Intermedia 25 | 26 | 8:00 PM AMS Star Night 27 | Observatory Maintenance 28 Sunset: 7:57 PM |
| 29  | 30 | 1 | 2 | 3 | 4 | 5 |

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MDAS

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General Meetings:

Fourth Tuesday every month,
except on the third Tuesday in
November and December.
Refreshments and conversations
Meetings begin at 7:15pm.

Where:

Concord Police Association
5060 Avila Road, Concord, CA 94596-3754

Directions to facility:

Avila Road is off Willow Pass Road. Turn east
onto Avila Road approximately 300 yards
south of the Willow Pass Road off-ramp from
the Route 4 freeway. Turn right into the Police
Association Facility at the crest of the first hill.

